

**AMENDMENTS TO THE CLAIMS**

1. (Currently Amended) A method comprising:  
deriving a ventilation related parameter in real-time from a patient;  
deriving apneic intervals from the parameter;  
distributing the apneic intervals as counts on a histogram; [[and]]  
calculating a centroid for each cluster of counts on the histogram  
diagnosing apnea as a function of the centroids; and  
and delivering therapy to the patient in response to the detection of apnea.

2. (Original) The method as recited in claim 1, wherein deriving apneic intervals comprises:

determining a value for each ventilation cycle based on the parameter;  
filtering the values using a threshold value to separate values representing normal ventilation cycles from values representing apneic ventilation cycles; and  
measuring the apneic intervals between the filtered values representing periods of normal ventilation.

3. (Original) The method as recited in claim 2, wherein the parameter comprises variations in thoracic impedance in response to breathing.

4. (Original) The method as recited in claim 3, further comprising normalizing the variations in thoracic impedance.

5. (Original) The method as recited in claim 3, further comprising normalizing the variations in thoracic impedance by differentiating the variations.

6. (Original) The method as recited in claim 2, wherein the parameter comprises one of chest movements in response to breathing, variations in air pressure in response to breathing, or variations in tidal volume in response to breathing.

7. (Original) The method as recited in claim 2, wherein determining a value for each ventilation cycle comprises determining a valley-to-peak magnitude for each ventilation cycle, wherein a respiratory expiration comprises a valley and a respiratory inspiration comprises a peak.

8. (Original) The method as recited in claim 2, wherein determining a value for each ventilation cycle comprises calculating a rate of change of the ventilation related parameter at regular intervals and summarizing the calculated rates of change during each ventilatory cycle using a single value.

9. (Original) The method as recited in claim 2, wherein the threshold value for filtering the values comprises one of: a mean of the values; an average of the values; a moving average of the values; a standard deviation from the mean for the values; a multiple of a standard deviation from the mean for the values; or a value derived from medical definition of apnea.

10. (Original) The method as recited in claim 9, further comprising measuring a time interval between two of the centroids.

11. (Currently Amended) The method as recited in claim 9, ~~further comprising~~ wherein diagnosing apnea as a function of the centroid comprises measuring a time interval between two of the centroids and diagnosing apnea based on the time interval.

12. (Original) The method as recited in claim 1, further comprising recomputing the one or more of the centroids at regular intervals.

13. (Original) The method as recited in claim 12, wherein the regular interval is daily.

14. (Original) The method as recited in claim 12, further comprising tracking the patient's health based on changes in the centroids due to the recomputing.

15. (Original) The method as recited in claim 1, further comprising performing the method in real-time.

16-33. (Cancelled)